

Remarks

Applicant has amended claims 7, 9 and 12, responsive to the objections raised by the Examiner in Section II of the Detailed Action.

Applicant has also amended claims 1, 2 and 11 to overcome the rejections set out in Section III of the Office Action. Additional amendments have been made to the claims to more particularly point out the invention.

Turning now to the claim rejections set forth in Section IV of the Office Action, applicant would first like to review briefly the nature of the inventions being claimed.

Brief Review of the Invention

As best seen in FIGS. 3 and 4, the inventions defined in the claims are concerned with a feed auger located at the bottom of an elongated grain wagon. These augers extend from the rear of the grain wagon to a forward location; and they feed a separate discharge (or unload) auger located at the front of the grain wagon. The feed augers are substantial in length and weight, causing problems or difficulties in original assembly to the wagon, as well as in inspecting the augers and conducting routine maintenance or repair on the augers. Typically, as will be demonstrated in subsequent references to some of the prior art cited by the Examiner, these augers may be up to 30 feet in length or more, and they are typically rigidly mounted at the front and rear ends, due to the substantial weight of the auger. Thus, there has been considerable effort required to remove an auger for repair, or to replace an auger.

Moreover, due to regulations that have been imposed on farmers in more recent times, it is much more important now to clean all residue seed from the bottom of a seed wagon. This is a time-consuming and difficult problem to accomplish manually.

Accordingly, the present invention mounts the auger as an integral assembly only at the front of the auger and at the rear of the auger. As seen in FIG. 5, the front of the auger is mounted to the forward wall 31 of the wagon by means of a forward hub 42 housing a bearing supporting the drive shaft. Moreover, the rear of the auger (to the right in FIG. 5) is similarly mounted by a rear hub 43 to a removable rear plate 25 removably secured (by bolts) to the rear wall 23 of the hopper. Each of the rotary connections between the respective forward and rear hubs and the adjacent end of the auger include a set of drive dowels, such as those designated 58 in FIG. 5 (for the forward hub) and 69 (for the rear hub) which slide into corresponding openings into a plate mounted in the auger tube adjacent the associated end of the tube. The two drive plates are designated 61 and 74 in FIG. 5. Thus, simply by removing the bolts mounting the end plate 25 (which are readily accessible from outside the wagon), the rear hub 43, which is mounted to the end plate, is readily removed (the auger is, of course, appropriately supported within the wagon), and the entire auger assembly can be removed through the rear opening, if desired. For brevity, these are referred to as "quick couplings", as distinguished from welded or bolted or otherwise fastened couplings.

According to a second aspect of the invention, a curved clean out pan, conforming to the curved space between the auger flights and the bottom trough of the hopper, and

designated 75 in FIG. 10, is inserted into the curved recess, preferably stored toward the front of the auger, but also capable of being reciprocated in a fore and rear direction by manipulation of a rod capable of being threadedly attached to the clean out pan for moving the seed residue in the recess either forward (so that the residue may be expelled by means of the forward delivery auger) or rearward so that the residue can be discharged through a covered opening 76 at the rear of the auger assembly.

Discussion of Section 103 Rejections

Referring now to the claim rejections, Sections IV, claim 1 stands rejected as unpatentable over the combination of *Davis*, *Hagemeyer* and *Alms*. Claim 1 is directed to the combination of an auger received in a trough of a grain wagon and spaced from the trough to define a curved recess beneath the auger, and a clean out pan received in the curved recess "conforming to the shape thereof for reciprocal movement in said recess parallel to [the] access of said auger for removing residual grain in said recess."

The Examiner states that *Davis* discloses a clean out pan (134). This is not the case. Reference numeral 134 in FIG. 9 of *Davis* denotes a "bottom clean-out gate" (col. 7, lines 50-51). The disclosure does not say how the gate is mounted, but this is no disclosure that it is passed along the bottom of the auger to clear the recess beneath it, as claim 1 recites. Nor could this be done in *Davis*, because the gates 132, 134 of *Davis* are clearly flat as seen in FIG. 9, and designated to flap downwardly beneath the boxes 130 between the auger sections 136, 16. As can be seen in FIG. 9, there are also a side clean out gates 132 pivotally mounted to the hopper boxes 130 which are located respectively beneath the two funnel-

shaped down spouts of the two auger bins of *Davis*. These gates are clearly pivotal mounting plates or doors associated with the junction boxes 130 since that is all that is needed or necessary or shown in *Davis*. There is no disclosure of a clean out pan moveable axially of the auger to push residue toward the front and rear, as taught and claimed by applicant.

In *Davis*, the cross auger of FIG. 9 does not extend along the length of the two separate funnel-shaped hoppers 12. Rather, the auger of *Davis* is housed within tubular sections 136, 16 in FIG. 9, and the grain is introduced to the augers only at the boxes 130. Thus, there is no recess between the auger flights and a trough at the bottom of the hopper having a curved cross section or defining a curved recess in which a clean out plate can be reciprocated front to rear of the auger.

Claim 1 recites that the clean out pan is received in the curved recess between auger and trough (not tube) and conforms to the shape thereof "for reciprocal movement in said recess parallel to said access of said auger for removing residual grain in said recess." In *Davis*, on the other hand, any residual grain remaining in the open boxes 130 is simply deposited on the ground under gravity when the gates 132, 134 are swung open. Residual grain in the tubes 16, 136 is not cleared in *Davis*.

In fact, none of the references cited by the Examiner disclose a clean out pan as recited in claim 1. For this reason alone, it is submitted that claims 1-10 define patentable subject matter under Section 103.

In determining the issue of obviousness in light of a combination of references, the claimed invention must be considered as a whole. *See, Jones v. Hardy*, 727 F 2d 1524, 1529, 220 U.S.P.Q. 1021, 1024 (Fed. Cir. 1984) (though the difference between the claimed invention and the prior art may be slight, it may also have been the key to advancement in the art). The references must also be considered as a whole and suggest the desirability and thus the obviousness of making a combination; *Lindemann Maschinen Fabrik GmbH v. American Hoist and Derrick Co.*, 730 F 2d 1452, 1462, 221 U.S.P.Q. 481, 488 (Fed. Cir. 1984). The references must be viewed without the benefit of hindsight vision accorded by the claimed invention. *W.L.Gore & Associates, Inc. v. Garlock Inc.*, 721 Fed. 2d, 1540, 1553, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983). The teaching or suggestion to make the claimed combination and a reasonable expectation of success must both be found in the prior art and must not be based on applicant's disclosure. *In re Vaeck*, 947 F 2d 488, 20 U.S.P.Q. 2d 1438 (Fed. Cir. 1991).

In furtherance of the rejection of claim 1, the Examiner cites *Alms* for the teaching of a "clean out pan for reciprocal movement clearing residue". The Examiner states that it would have been obvious to a person of ordinary skill in the art to "modify *Davis* with the pan of *Alms* in order to remove residue from under the auger". *Alms* discloses a plurality of individual tray sections called "troughs", such as that designated 24 in FIGS. 1 and 2. These sections are fed through a rear housing 22 which is permanently mounted to the rear wall 18 of the grain dryer bin. The individual trough sections must be connected together and then fed through the housing 22, urged by a crank 23 and complex chain

drive mechanism shown in FIGS. 3 and 4 to close the bottom slot of the bin, which runs the entire length of the bin. In short, *Alms* clears out the bottom of the trough by removing the entire lower portion of the trough by means of a complex, segmented section of interconnected troughs. These troughs are fed through a rear housing which is permanently mounted to the hopper. Thus, there is no way to remove the auger of *Alms*, nor is there any suggestion to do it, through the rear wall of the hopper.

It is respectfully submitted that *Alms* shows a structure which exacerbates the problem of auger removal, rather than addresses it. Nor does *Alms* disclose a method of mounting the auger as recited in claim 1. The means for mounting the auger in *Alms* is not specifically discussed in detail, but in FIG. 2, it appears that the auger is suspended above the opened bottom of the bin 10. Thus, there is no clean out pan which conforms to the shape between the bottom trough of the hopper and the auger flighting. This is clear from a review of FIG. 2 and the underlying nature of the improvement described in *Alms*.

It is thus submitted that *Alms* teaches away from the invention described in amended claim 1, rather than suggesting a solution to the problem of auger removal. Nor could the structure of *Alms* be combined with *Davis*, according to any suggestion to a person of ordinary skill in the art contained in *Alms*, contrary to the suggestion of the Examiner in rejecting claim 1. *Davis* specifically discloses two separate hoppers, each having a funnel bottom, see FIG. 2, with a common auger extending between them and open-sided down boxes for admitting the grain into open sections of the auger which then communicates the grain through closed tubular sections. It would be impossible to

combine the structure of *Davis* with the portion of *Alms* picked out from *Alms* by the Examiner.

Considering *Davis* in its entirety (i.e. an auger received in two tubes separated by an open box) and *Hagemeyer* (a conventional feed auger with a device for breaking up clumps of material being broadcast at the rear), there is no suggestion to combine these two different structures in a way to meet the limitations of claim 1. They do not even recognize the problem solved by the combination of claim 1, let alone suggest a solution.

Moreover, in claim 2, it is specifically recited that when the clean out pan is moved toward the front of the auger, the residual grain in the recess is urged forwardly to the unload auger, and as the clean out pan is removed rearwardly, the residual grain is moved toward the discharge opening. Neither a forward unload auger nor a rear discharge opening in the hopper is disclosed in *Davis*. The Examiner asserts that *Davis* discloses an unload auger 18, but it is located at the rear of *Davis*' vehicle, and even at that, it is a long way from the clean out gates mentioned in *Davis*, which are located beneath the funnel shaped lower portion of the separate hoppers in *Davis*, and a shaped, moveable clean out pan, as claimed. Neither *Davis* nor *Alms* discloses an axially moveable pain urging residue to both the front and rear of the hopper.

The Examiner then cites *Hagemeyer* for the teaching of a cover 66. This appears to be a typographical error because 66 appears to disclose a flow plate (see col. 4, line 50), the purpose of which appears to be to control the flow of material to the pivoting discharge chute 44, and to break up lumps in the material being processed, rather than to selectively

open or close a discharge opening for dispensing residual grain collected by a longitudinally movable clean out pan, as the claim recites.

Turning to claim 3, the Examiner states that *Davis* additionally teaches an elongated rod "(at 134)". As indicated above, reference numeral 134 refers to a gate which is fixed relative to the length of the cross auger shown in FIG. 9 of *Davis*, even though, conceptually, it may be pivotal toward and away from the access of the auger for closing and opening respectively. The gate does appear to have a handle, but it does not extend in the recess between a bottom trough of a hopper and a conveyor auger. Further the center-drop gates of *Davis* would not be necessary with the structure of *Alms* which completely opens the bottom trough.

With respect to claim 4, the Examiner suggests that *Davis* teaches an elongated recess. Claim 4 recites that the recess is in the hopper for storing the rod when not in use. There is no suggestion that the handle (unnumbered) in FIG. 9 of *Davis*, of the pivoting gate 34 is removable, let alone stored in any recess of the hopper.

Turning now to claim 7, the Examiner states that *Davis* also teaches a drive member having a plurality of dowels (FIG. 9) and a plate defining bores (166).

Claim 7 recites the mounting hubs include a drive member having a plurality of drive dowels "extending axially of said auger", and that the auger includes a tube in which there is mounted a plate defining the bores for receiving the dowels of the drive member. This provides the facility of removal simply by shifting the auger axially, as described above. The Examiner fails to indicate what "dowels" are shown in FIG. 9, of *Davis* leaving

applicant to guess what structure is being referenced since no dowels or drive pins are disclosed in *Davis*. However, an explanation of the structure of FIG. 9 of *Davis*, will, it is believed, illustrate that this is a rejection which is not supported by the facts.

The drive motor of *Davis* is mounted to a hydraulic motor support 128 (in FIG. 9, the internal auger and its associated bushings and couplings) is removed from the tubular housings 136, 16. The motor support 126 is bolted to the forward surface of the front box 130. Turning to the structure in front of the auger 156, it illustrates a conventional mount so that applicant is familiar with it. Numeral 168 designates a coupling sleeve for coupling the motor (fed through the motor support 128) and through the center opening of a four-holed flange bearing 166 (the corner apertures being for mounting bolts 124 and washers 126 and nuts 122).

The plate of the flange bearing is also supported by the forward wall of the box 130 so that the coupling sleeve 166 is coupled to the auger screw bushing 160 which, in turn, is coupled (typically by means of a spline) to the auger drive shaft 158, there being a direct coupling by means of screw 124 and nut 122. This is hardly a "slide-in" or "quick disconnect" coupling using dowels slidable into receiving apertures, the dowels extending axially of the auger, as claim 7 recites.

In short, the plate 66 of *Davis* has four corner holes which are mounting holes and one center opening which provides bearing support for the coupling sleeve.

The Examiner suggests that it would have been obvious to modify *Davis* by including the tube of *Hagemeyer* "in order to reduce the weight of the auger". However,

the purpose of the dowel drive pin/apertured plate, such as 61, is to provide a reliable “quick disconnect” torque coupling mechanism and support of the entire auger from only the front and rear portions of the auger, while permitting easy disassembly of the auger without any fixed weldments or the like, and with only the end plate 25 having bolts to be removed in order to accomplish the decoupling of the auger. Applicants’ apertured plates have nothing to do with reducing the weight of the auger as the Examiner seems to suggest. The claimed structure allows the heavy, cumbersome auger, located in the trough at the bottom of a large wagon bin, to be removed, replaced and/or inspected simply by removing a single end plate (from outside the storage bin) which plate carries the mount for the distal end of the auger, and simply sliding out the driven end, using the same auger tube/hub interface, employing sliding dowel pins and apertures, none of which is disclosed or suggested in any of the cited references, but is disclosed in detail on page 13, beginning on line 14 of applicant’s disclosure.

With respect to many of the rejections set out in the Office Action (for example, rejections set out in paragraph 1.4 - 1.7 on page 4 of the Office Action), the Examiner simply takes broad, generic showings from various prior art patents and combines them, without any suggestion (express or implied) in either of the references to make such a combination. For example, in paragraph 1.5, the Examiner combines the teachings of *Davis* and *Alms* in a rejection of claim 6. Claim 6 characterizes the structure of claim 1 in that the auger is mounted "only at the front and rear and said curved area is unobstructed for reciprocal motion of said clean out pan" and the clean out pan is movable the entire length of the auger. Turning to FIG. 9 of *Davis*, *Davis'* auger is housed in two tubular sections of closed cross section, designated 136 and 16. Open-topped junction boxes 130 are located beneath the two grain bins to route the grain under gravity to the auger.

It is respectfully submitted that a grain pan having a curved shape (to conform, for example, to the lower portion of either of the auger tubular housings 16 or 136 in *Davis*), could not accommodate a clean out pan which would pass not only through the augers but also through the down-flow junction boxes 130, as implied in the rejection. Any such clean out pan traveling the length of the housing for the auger would fall into the junction boxes or at least be interrupted by the end plates of the junction boxes. To suggest any combination with the structure of FIG. 9 of *Davis* to reject claim 6, it is respectfully submitted, is no more than cherry-picking elements from the prior art with no hint in the prior art of what such element is, how it functions, or what purpose it serves.

The mandate of Section 103, in considering the obviousness of patent claims, is two-fold. The claim must be considered in its entirety, and so must the prior art be considered in its entirety. Considering the structure of *Davis* in its entirety, as is mandated, underscores the inappropriateness of combining *Davis* as a reference with any other reference of record in this case, to reject claims, no matter how broadly stated, which include a clean out pan passing the length of the auger (as opposed to the sectional auger housings, if any).

Turning now to the rejection in paragraph 3.1 of the Office Action, the insufficiency of *Davis* as a reference for teaching the combination of an apertured plate and axially extending drive dowels to provide a "quick disconnect" coupling for the auger, at both ends, has been presented above. In paragraph 3.1, the Examiner further adds *Phillips* for the teaching a flange having pins 62. The element 62 in *Phillips* is a threaded bolt for fastening a backing plate 64 attached to the hub. Not only are the bolts not "pins" since they are threaded and fastened, but they are not components of a "quick disconnect" drive system between an auger and a hub mount for the auger, and capable of transmitting torque from a drive member to the auger. Nor do threaded fasteners suggest such a structure. The bolted connection of FIG. 3 of *Phillips* clearly demonstrates the inappropriateness of that reference for the recitation of an auger tube including an apertured plate fixed adjacent to the rear end thereof and receiving, in a quick disconnect structure, the drive pins of a flange.

Turning now to the rejection of claim 11, in paragraph 3.3 of the Office Action, the claim is directed to the “quick disconnect” coupling/ drive system for the auger, as well as its rear mounting, as described above. The Examiner rejects claim 11 based on *Davis*, *Hagemeyer* and *Phillips*. The insufficiencies in each of these references as rendering obvious the structure of claim 11 has been addressed above. Moreover, the Examiner has not attempted to show anywhere in *Hagemeyer* or *Phillips*, as the decisions cited above require, precisely what suggests, to a person skilled in the art, why the structure in those latter two references suggests the claimed structure, because *Davis* employs a conventional four-hole flange bearing 66 for supporting the auger drive shaft, and *Phillips* shows a rigid cross bolt interconnection between the drive shaft and the auger tube, bolt 124 and nut 122. In this record, that suggestion is made only by applicant. Moreover, even if such a combination were suggested, the structure of *Phillips* does not meet the claim language for the reasons explained in detail above. *Phillips* teaches a rigid, bolted connection for mounting a backing plate 64 to a hub 30 (see col. 5, lines 5-7), and FIG. 3. Such a structure nowhere suggests the claim structure of axially inserted pins, mounted in a drive member, and slidably received in an inner apertured plate mounted in the center tube of an auger in an agricultural grain wagon.

Conclusion

For the reasons indicated in detail above, applicant respectfully submits that all of the pending claims, as amended, are allowable. Reconsideration and favorable action is respectfully solicited.

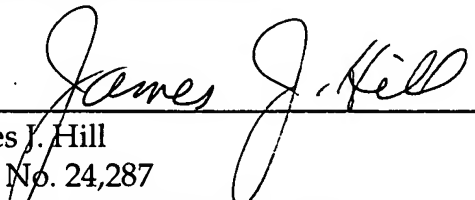
Serial No. 10/766,109 filed January 27, 2004
Amendment A

Request for Extension of Time

Applicant hereby requests an extension of time of one month to respond to the non-final Office Action of November 30, 2005. A check in the amount of \$120.00 is enclosed. Authorization is given to charge any additional amounts, or refund any overpayments to Account No. 05-1060.

Respectfully submitted,

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